



THOMAS G. NEWMAN,
EDITOR.

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Editorial Buzzings.

When writing an article for the press,
Whether prose or verse, just try
To settle your thoughts in the fewest words,
And let them be crisp and dry.
And when it is finished, and you suppose,
It is done exactly brown,
Just look it over again and then
Boil it down.

Mr. Morris A. Williams, of Berkshire, Tioga county, N. Y., died April 18, aged 40 years. Mr. Williams has been engaged in bee-keeping for a number of years, and was a regular subscriber to the BEE JOURNAL. His malady was consumption, and last Fall he took a trip to the West, hoping thereby to improve his health by a change of climate, but the grim reaper, Death, had already marked him for his own. Mr. Williams was a highly-respected citizen, and was the senior member of the firm of M. A. Williams & Co., whose railroad apiary was illustrated on page 757 of the BEE JOURNAL for 1882.

It is Encouraging to know that our labors are appreciated. It helps us all to renewed and diligent exertions when we know that those for whose benefit we labor, recognize and esteem our efforts. The following from Dr. C. C. Miller will encourage our friend, Hon. J. M. Hambaugh, and so we publish it :

Representative Hambaugh is one of the sort worth having in a Legislature. The work he is doing will not only benefit Illinois bee-keepers, but will help to stir up the matter in other States. If the fraternity only ask for what they need, there seems to be no difficulty in getting it, but it helps greatly to have a man like Hambaugh at headquarters.

C. C. MILLER.

Marengo, Ills., April 17, 1891.

It must not be forgotten, however, that we have several others in the halls of the Senate and House of Representatives, who are working for our interests, and are entitled to our highest esteem and approbation. They are co-laborers with him, for the interests of apiarists.

But Little has been heard in the bee-papers of late from our friend J. M. Hicks, who has for years figured conspicuously in the bee-keeping world, but we received a letter from him last week. He is getting along in years, and necessarily, with age comes infirmity, in a greater or less degree in us all. He said :

I write you for a two-fold purpose ; first, to let you know that I yet live, and regularly receive the AMERICAN BEE JOURNAL, which contains much that interests the *oldest* bee-keepers as well as others ; and, secondly, to tell you about the death of our venerable friend, Dr. Stephen Hathaway.

A Queen-Cage is received from Jenkins & Parker, of Wetumpka, Ala., $1\frac{3}{4} \times 2\frac{1}{4} \times \frac{1}{4}$ of an inch. It weighs but half an ounce, and transportation in the mails costs but one cent. Printed on the cover are the following directions :

After taking off this board, see that the queen is all right. Place the cage between the top-bars of two ^{bottom} frames, directly over the clus

the wire-cloth down, drawing frames firmly against it. With a hive having room enough the cage may be laid on top the frames. The bees in the hive will eat the candy out through the hole in the wire-cloth in about 24 hours, thus releasing the queen. Do not open the hive for two days, after placing cage; and then if the queen is still in the cage, close up for two days longer. The idea is to let the bees release the queen themselves, when the hive is closed and quiet. *First be sure the colony is queenless.*

Of course, the cage has a compartment for the food, accessible only through a small aperture. The wire-cloth has a round hole made ingeniously through the center of one side, for use as above described. It is illustrated on page 586.

Dr. Stephen Hathaway, of Muncie, Ind., departed this life on Monday, April 20, at 3:30 a.m. Mr. Hathaway was one of Indiana's prominent bee-keepers. He was a kind and loving husband and father, and leaves a wife and several children, all of the latter having grown to man and womanhood. In all of his business transactions Mr. Hathaway was honest and honorable, and his whole aim in life seemed to be to do good in all things. The widow and family have our sympathy in their sad bereavement.

A Slight Error.—On page 578, in an article on foul-brood, Mr. C. J. Robinson says that Prof. Cook "has not broached the subject of the origin of the disease." Now, we feel constrained to inform Mr. Robinson that he is in error in this matter, and that by reference to page 351 of the BEE JOURNAL for 1890, he will find that Prof. Cook not only states that the disease is the result of bacillus alvei, but also describes them. We mention this, believing it to have been an oversight on his part.

The Price-List of J. J. Snyder, North Lima, Ohio, is received.

Foul-Brood Microbes.—In addition to the testimonies already given on pages 470 and 513, from manufacturers of comb-foundation, as to the killing of spores and microbes when making beeswax into comb-foundation, Mr. D. A. Jones, of Beeton, Ont., presents the following in the *Canadian Bee Journal*:

Science and practice do not always accord, and I am willing to believe that they do not in the present instance. I am not prepared to say that the heat ordinarily required for the boiling of honey or wax will kill the foul-brood germs or spores, which may be in them, but I do say that in all my experience (and I have had a good deal) I have never had a case of its return, after submitting them to this heat.

I have often taken foul-brood honey and put it into a dish, suspending the dish in boiling water, but not allowing any water to get mixed with it. In this way I have rendered unfertile all germs of disease which were in it—at least there were none ever appeared afterward. I have also made similar tests with wax, with the same results.

Wax melted in the sun, or at a lower temperature than the boiling point of water (212°) may, perhaps, not be free from the fertile spores. I should not care to risk it. My beliefs in this direction have suffered no change since I put myself on record at the Michigan convention some years ago, as stated by Mr. Corniel.

Ventilation.—Respecting this Mr. G. M. Doolittle remarks as follow in *Rural Home*:

All hives having bees in them should be provided with ample ventilation during the Winter months, but it is not absolutely necessary to give upward ventilation if the hives are well ventilated at the bottom. Some ventilation is necessary in any climate to prevent dampness from accumulating in the hives and injuring the outside combs with moldiness. What is often called "upward ventilation," is really no ventilation at the top, in the meaning of some other people. If the frames and the cluster of bees, at the top of the hive, is covered with a number of bee-quilts, or with one quilt and a sawdust cushion, forest leaves or chaff, they are said by some to have upward ventilation, and the latter would be the nearest right.

The National Bee-Keepers' Union.

HOW TO BECOME MEMBERS.

Several have sent inquiries to know how to become members of the Union. In order to answer all at once, and save writing a letter to each, we invite attention to the following :

The Entrance Fee is \$1, and that pays for the Dues of any portion of the unexpired current year, ending Dec. 31.

Then it costs only one dollar for Annual Dues, which are payable every New Year's day, and must be paid within six months, in order to retain membership in the Union.

If membership ceases, all claims against former members also cease ; and all claims to the protection of the Union are dissolved.

The Constitution of the Union reads as follows :

ARTICLE I.—This organization shall be known as the "National Bee-Keepers' Union," and shall meet annually, or as often as necessity may require.

ARTICLE II.—Its object shall be to protect the interests of bee-keepers, and to defend their rights.

ARTICLE III.—The officers of this Union shall consist of a President, five Vice-Presidents, and a General Manager (who shall also be the Secretary and Treasurer), whose duties shall be those usually performed by such officers. They shall be elected by ballot, and hold their several offices for one year, or until their successors are elected ; blank ballots for this purpose to be mailed to every member by the General Manager.

ARTICLE IV.—The officers shall constitute an Advisory Board, which shall determine what action shall be taken by this Union, upon the application of bee-keepers for defense ; and cause such extra assessments to be made upon the members as may become necessary to their defense ; provided that only one assessment shall be made in any one fiscal year, without a majority vote of all the members (upon blanks furnished for that purpose), together with a statement showing why another assessment is desirable.

ARTICLE V.—Any person may become a member by paying to the General Manager an Entrance Fee of ONE DOLLAR, for which he shall receive a printed receipt making him a member of the Union, entitled to all its rights and benefits. The Annual Fee of \$1.00 shall be due on the first day of January in each year, and MUST be paid

within six months in order to retain membership in this Union.

ARTICLE VI.—The Funds of this Union shall be used for no other purpose than to defend and protect its members in their rights, after such cases are approved by the Advisory Board ; and to pay the legitimate expenses of this Union, such as printing, postage, clerk-hire, etc.

ARTICLE VII.—This Constitution may be amended by a majority vote of all the members at any time.

The Entrance Fee and Dues must be sent direct to the General Manager, Thomas G. Newman, Chicago, Ills., who will record the names, and send receipts for every dollar sent in.

We call particular attention to the remarks of Mr. E. France, on page 571, concerning the Union. Let every bee-keeper read it, and consider whether it is not his duty to become a member of the Union. On one thing Mr. France is in error. The officers of the Union have been made the members of the Defense Committee of the North American Bee-Keepers' Association, and in that way the two organizations are "united" and act in *harmony*, but yet they have independent management and different Constitutions and By-Laws. This is the only kind of "union" which we think could be considered, and which would be mutually advantageous and agreeable.

Permanent Exhibit.—Northern manufacturers and dealers in machinery and manufactured articles are invited to join with the South and show the latest labor-saving devices of every description, at a permanent exhibition, to be inaugurated by the fourteen Southern States, New Mexico and Arizona.

The exhibition is to be opened in Raleigh, N. C., May 15, 1891, and is under the direction of the several State governments, for the purpose of displaying their products and resources. From Oct. 1 to Dec. 1, a great Southern Exhibition will be held at the same place.

Hon. John T. Patrick is Secretary, with headquarters at Raleigh, N. C., and anyone desiring information should address him.

Queries and Replies.

Liquefying Candied Honey.

QUERY 764.—1. I wish to build a honey-tank holding one or two barrels, and arrange the same so that the honey in it may easily be liquefied when granulated. In what shape and of what material should I construct it? Would galvanized-iron be a good material? 2. Not having steam at my command, I must resort to either kerosene or wood fire; but how can I best apply it?—F. G.

I can not advise.—M. MAHIN.

Try James Heddon's plan.—C. C. MILLER.

Why make your tank so large? Why not use the 60-pound can?—EUGENE SECOR.

I am not posted, having had no experience. I only run a small apiary for experimental purposes.—J. E. POND.

For storing honey, I use honey cans holding about 300 pounds each. I believe tin is considered better than galvanized-iron for holding honey.—G. M. DOOLITTLE.

If you need to use so large a place to liquefy honey, you are smart enough to get along without asking this question. I should prefer a good quality of tin.—A. B. MASON.

1. Do not use galvanized-iron, as *some* of it corrodes badly. 2. See my article in a late number of the *Review*, describing the best plan I know of to liquefy candied honey.—JAMES HEDDON.

1. I would not want such a tank as you describe. I prefer tin cans holding 60 pounds. 2. Two such cans may be placed in a common wash boiler, partly filled with water.—H. D. CUTTING.

1. Have had no experience in that line. Galvanized-iron is not a proper material to place in contact with honey. 2. Why not make a sun evaporator like some of our California friends.—C. H. DIBBERN.

1. Such a tank should be made double. The inner one of heavy tin, and the outer one may be of galvanized-iron. 2. Three or four inches of water should surround the tin tank. Then kerosene, coal or wood may be used to heat with.—G. L. TINKER.

1. Our tank is square, and made of copper. Galvanized-iron would do. 2. Honey runs too much risk of being

spoiled if liquefied in a tank placed directly over the fire. Place your honey in a water bath, to be liquefied *au bain marie*.—DADANT & SON.

You should have your honey tank (probably tin) encased in a sheet-iron tank, placed over a furnace, and so constructed that you can convey water into the sheet-iron tank to the requisite depth, and heat it gradually until the desired result is attained.—J. M. HAMBAUGH.

1. Why not use smaller tin cans, and leave them open to ripen the honey. 2. If granulated, and we wish to liquefy, place these cans in a boiler of water or other large tank. Be careful that the cans are raised a little from the bottom of the boiler before the water is heated.—A. J. COOK.

1. Large cans holding, say, 150 pounds, made of heavy tin, or galvanized-iron would, I think, be preferable to a tank like you mention under the circumstances. 2. The cans could be placed, one at a time, in a large kettle containing water, or even placed in a large wash-tub in a warm room, and hot water poured around the can.—MRS. L. HARRISON.

1. Of heavy tin or galvanized-iron, made circular, with flat bottom, like a common two-quart pail. 2. If you must do it in that way you could have a shallower and somewhat larger vessel placed so that fire could be introduced under it. Put the tank in this on thin strips of wood before filling. Fill the shallow vessel with water before heating.—R. L. TAYLOR.

1. Do not do it at all; you will have a dirty muss of it. Get a tinner to make you a large round boiler, with an outer case around it, so that the water will surround your boiler. Have a honey gate to pass through the outer case into the boiler to draw off the honey. 2. Fit the melter or boiler to the top of a large stove, and fire up. Shovel your candied honey into the melting can or boiler, and as fast as it liquefies, draw it off into your shipping vessels. You cannot liquefy honey by direct heat without damaging its flavor.—G. W. DEMAREE.

Tin is better than galvanized-iron for a honey tank. It would be better to use the 60-pound tin cans. In these the honey can be liquefied more handily than in such a large tank as is mentioned in the query. Sheet-iron will do for the outer tank, which must allow water all around the honey-tank and at the bottom of it.—THE EDITOR.

Topics of Interest.

Making Queen-Cell Protectors.

G. M. DOOLITTLE.

A correspondent writes thus: "Please tell us something in the AMERICAN BEE JOURNAL about queen-cell protectors. How are they made? How do you put in the queen-cells? How do you fasten, or hang them, to the brood-frames; position on frame, etc.?"

If I am right, the idea of caging queen-cells so as to keep the bees from destroying them, and at the same time allowing them to hatch in the hive and let the queen walk right out among the bees, the same as if the cells were not caged, originated with me; and was brought about by the loss I sustained in trying to make something work which others said was a success; but which proved a total failure with me, namely: The placing of a nearly mature queen-cell in a colony, or nucleus, at the time of taking away a laying queen.

Many still say that they have no trouble in thus giving queen-cells, and if they tell the "whole truth and nothing but the truth," this article will be of no benefit to such. The cell protector is made by rolling a small piece of wire-cloth around a V-shaped stick, and while in place, fastening the side which is out, by sewing in a wire, so that a small, but not a very flaring, funnel is made, the hole in the small end being as large as an ordinary lead-pencil.

Some of the supply dealers keep them for sale in the stamped form, but as I have used both, I prefer the home-made ones, as above, for the reason that the points of the wire-cloth, which stick out all around the hole in the small end, seem to prevent the bees working away at the end of the cells as much as they do with the others; for at times, with the pressed ones, they seem to think that the cage should not be there, and as the end surface is smooth, so as not to discommode them at their work, they bite away at the wires and the cell until the end of the cocoon covering is eaten through, and the queen destroyed. After having several failures with those bought, and none with those made at home, I studied into the matter and came to the above conclusion, which, I think, is right.

Having the protectors made, we are ready for the queen-cells. If the cells are built from the wax cups (my book on Queen-Rearing tells how these cups are made), there is no trouble in picking the cells off the stick they are built on, and slipping them into the protectors; but if they are built in the ordinary way, on the surface of the combs, a good deal of trimming will have to be done to have them go well down into the point of the protector, as they should.

The ends of the cells should go down to within three-sixteenths of an inch of the small end of the protector, or to within that much of the extreme outside points of the wires, so that when a bee goes in to attack the end of the cell, these wires are continually "punching" her about the thorax as she moves around. If any cell will not thus go down, trim it until it does.

If you cut through the cell at or near the base, so you can look in and see the queen, it will do no harm, for when the cell is caged, the bees cannot get at these open places to tear the cell to pieces and drag the queen out, as they always will where a cell is mutilated and left unprotected. This one item alone, of being able to save all cells, no matter how closely built together, will pay all to make and keep a few of these protectors on hand; for who has not destroyed many cells in years gone by, in trying to separate two or more built together?

If the cell is not hatched when I think, perhaps, it should be, I take it out of the protector, cut a hole or slit in the side near the base, to see if the pupa is all right, sometimes taking them out in my hand and looking at them until I am satisfied, putting them back in the cell again, putting the cell in the protector, and the protector back in the hive; the bees nor the queen being any the wiser for the curious eyes that have peered inside the sacred domain, she hatching out as perfectly, in due time, as she would have done had the cell been left on the comb where it was first built.

After the cell is in the protector, I use a piece of a corn-cob to keep the bees away from the base of the cell. I formerly used a cork, but I like the cob the best, as the roughness of the cob keeps it in place without fastening, while the bees would sometimes work out the cork, unless it was fastened in. To keep them in place where I wished them in the brood-chamber, I formerly used a small wire, running this through the meshes above the cork, and twisting the wire to keep the cork from sliding out. The upper end of the wire was

now bent so as to hook over the tops of the frames, and thus the cell and protector were kept where I wished them.

Some seem to prefer this way still, but instead of doing this now, I take out the comb I wish the cell on and, at the place I wish it to stay, I make an indenture in the comb with the side and end of my little finger, and into this indenture I place the big end of the cell-protector, and by pushing against the cob stopper the cage is so imbedded in the comb that it is a fixture there. When this comb is placed in the hive, and the frames properly spaced again, the face side of the opposite comb rests against the protector, and thus it is kept in place, should the bees desire to work it out.

If the weather is cool, or the bees few in a hive, I insert the protector so that the point of the cell comes near the place of termination of the highest part of the brood in the comb, for at this place there is the most heat of any place in the hive. If the weather is warm, and there are plenty of bees in the hive, I push the protector into the comb at any place where it is the most convenient. The piece of wire-cloth used in making the protector is about $2\frac{1}{2}$ inches wide by 3 inches long, but it can be varied to suit.

Borodino, N. Y.

Improving the Markings of Bees.

REV. W. P. FAYLOR.

To improve the color of our bees, as well as their utility, is certainly a part of apiculture that should not be neglected; and, by the way, this very thing received considerable attention last season, and will receive more consideration this year.

Let it be distinctly understood that I am no advocate of any certain number of yellow bands. If our Italians, when left to themselves, would hold or retain their distinct markings, the matter would be different; but experience has proven beyond a doubt, that our three banded Italians, when left to themselves to rear their own queens and drones in nature's way, in a few generations lose all the yellow in exchange for the brown or black.

The question naturally arises, how shall we keep our bees handsome? To begin with, if we desire to rear queens that will be yellow to the tip, it will be necessary to make the bees start the queens from the egg, or very young

larva; for queens that are reared from advanced larva are usually dark in point of color, and those reared from the egg are always bright.

Yet we may rear nice golden queens and our bees not be very handsome, either, if we do not look after our drones. To attain the most desirable results, it is best to hand-pick the drones of a handsome colony. This can be done in July or August, during a spell of drouth, when all drones are usually exterminated, but the ones in the hive we have kept.

To keep drones in a hive, we have only to make a colony queenless, and see that it is kept queenless during a spell of drouth. If necessary feed the bees occasionally, then, on some cool day, go through the hive, examine every comb, and pinch the head off of every drone that is not nice and yellow.

Now, if your virgin queens, reared from the egg, mate with these handsome drones, you will have something to be proud of. If one resides where drones are abundant during all the Summer, then try the experiment late in the Fall—even after the frosts come.

I would not advise late breeding, as queens are less prolific when reared, while the normal heat of the bees is too low. I have some bees at present that are nearly as yellow as gold—showing only a little black at the tip. As far as my observation goes, these yellow bees come out ahead every time, and are just as much an improvement over the three-banded bee as the Poland-china hog is in advance of the old "Elm Peeler."

HOW TO ITALIANIZE AN APIARY.

Had I 40 colonies of black bees to be changed to Italians, I would buy a good breeding queen (only one), and introduce her to one colony, and see that this colony was strong in bees and brood by the beginning of June, at which time I should give them some nice drone combs; then, as soon as young drones begin to crawl out of their cells, I would give this colony two or three bright combs—putting them in the center of the brood-nest.

In two or three days, when the combs are well filled with eggs, remove the queen, and all other combs with unsealed larva, from the colony. Now, I would stimulate this colony by feeding. In six or eight days from the capping of the cells, cut out a queen-cell for each colony made queenless a few days previous, and insert the cell in a middle comb of the brood-nest. Always take

enough comb with the cell, so as not to compress the cell in the least.

Be sure to destroy all other cells started by these black bees.

I would keep this old colony, rearing these cells, queenless so as to preserve the drones, as the drouth will usually have ended the black drones before this time. We can also keep our bees pretty free from black drones by shaving down the drone brood once every 15 days.

No man ought to think of having 40 colonies of Italian bees without a book treating on bees and queen-rearing. The above is one easy method of Italianizing.

State Line, Ind.

How to Rear the Best Queens.

C. L. FISHER.

Why not produce 20 good queen-cells in each batch, as well as 12 or 15, as nearly all queen-breeders claim to do? They say, because a colony cannot furnish enough royal jelly to properly mature a greater number. Very good! We know that to rear the best queens the cells must be well supplied with the food, but here I will say that I believe there are more queens put on the market that were reared with too little of the jelly, than there is of those that had plenty.

A few years ago I reared queens quite extensively, and, not being suited with any of the old or new methods in detail, I aimed to improve on them so as to produce queens superior to those reared under the swarming impulse—if such a thing was possible—and I will try to prove to you that I succeeded, for I never bought queens as prolific and long-lived as those I reared by my improved method, some points of which were taken from both Doolittle's and Alley's methods.

When I am handling combs, or overhauling colonies of bees, I save all the little queen-cups that I find. I fasten these to combs, ten or twelve to each comb, in such position that they can be removed without disturbing one another.

About April 15 I unite two good colonies of bees, and introduce my breeding queen, then feed them little each night to induce rapid building up, and cause them to have a desire to swarm about the time I want to start my first batch of cells.

Now, examine the combs carefully, and if you find any queen-cells started, destroy them, for you do not know their

exact age, and when they would hatch—which you should know. Hang two of the combs which contain the queen-cups in the hive near the center, and look at them night and morning until you find eggs in the cups, then you will know when they will hatch.

Allow them to remain in the hive three days after the eggs hatch. At evening of the third day, select a strong colony, well supplied with young bees, remove the queen and all the brood and eggs (be sure to get every egg), close the hive with wire netting, and carry them into the cellar. Let them remain there until 8 o'clock next morning, then put them out on their old stand, take the combs containing the partly fed queen-larvae from the breeding hive, and brush (not shake) off the bees, and quickly put them into the other hive. After ten minutes give the bees their liberty.

By following out this method your queen-brood will get a double supply of jelly, and what is left after the queens hatch will appear as fresh as when first deposited in the cells, and the queens thus treated will be something extra.

When you remove the cells from the hive containing the breeding queen, look over the remaining combs, and if you find any cells, remove them, and give the colony another set of combs containing queen-cups, and you will at once get eggs in them.

Proceed as before, but do not use colony No. 2, that has just matured one brood of queens, but give them the brood and queen from another colony, and use that one to finish off brood No. 2.

By this method, you can produce a large number of extra-fine queens from one breeder with very little trouble.

South Deerfield, Mass.

The Bee-Keepers' Union.

E. FRANCE.

Shall it be united with the North American Bee-Keepers' Association? As a member of the Bee-Keepers' Union, I say, no. The two associations do not belong together. The North American Bee-Keepers' Association is composed for the most part of annual members, who join when the association happens to meet in their neighborhood. There are a few who go every year, but the number is very small in comparison to the number that belong to the Bee-Keepers' Union, and the latter has not one-tenth part of the members that it should have.

I do not see why it is that so few bee-keepers are willing to join, when the Union has done so much to defend our rights. Every bee-keeper in America is benefited by the Union. Then why not join and help the good work? Just put in one dollar a year, and be in a position so that, if you get into trouble, you can call on the Union to help you to defend your rights.

There is a great deal of prejudice and superstition about bees, and many think that the bee-keeper is stealing his living from other people's property. They claim the bees have no right to come on their land to gather honey. The land is theirs, the crop is theirs, the honey is theirs, and we have no business to let our bees go onto their land to gather honey. If the bees take the honey, the pasture is not as good, or the hay has lost a valuable part of its nutriment if the bees take the honey out.

Some may kick because the buckwheat failed. They say the bees blasted it by taking the honey; others say the bees have spoiled the apple crop. Some say the bees injure the corn crop by working on the tassels to gather pollen, and there are a great many other things that I hear advanced every year—just such nonsense about something in connection with the bees.

Now, let one of those superstitious men get mad at you. He wants to spite you somehow, he does not care how. If he thinks there is a possible show for him to make a case, he will sue you for damage done him by your bees. All there was to the Freeborn case was spite and ignorance. The man claimed that Freeborn's bees worked on his clover, and kept his sheep away so the sheep became poor, and died the next Winter in consequence.

This was the first case that the Union had to deal with, and was thrown out of court, giving the Union its first victory. The Union has had several cases since then, all victories. If you join the Union, you are entitled to help in case you are sued by any of these ignorant chaps.

We ought to have 5,000 members; then we should have a sum in the treasury that would command respect. Now is a good time to join. Commence with the year. Send your dollar to Mr. Thomas G. Newman, 246 East Madison Street, Chicago, and become a member of the Union. Do it now, before you forget it. In union there is strength. A man may be a bee-keeper and be a poor man. Now, you see some of his spiteful neighbors may take a notion to pitch into him,

knowing he is poor, just to annoy him, and make him expense. But if they knew he belonged to the Union, and he had an army of bee-men to fight the battle with him, they would let him alone.

There have already been several threatenings hushed up because the bee-keepers' enemy had to look the Bee-Keepers' Union in the face.

About the North American Bee-Keepers' Association, I think it is a good institution. I am sorry that I have not been able to attend the meetings. But it costs money to go, and this year money was scarce with us. About a dozen of us tried to get cheaper rates on the railroad, but failed, and so did not go.

Next year it is away down in Albany, and, of course, but few from these parts will be there, and so it goes, skipping about from one place to another, all over the continent. Well, that is all right. The very name of the association calls for it moving about from place to place. But, no matter where the meetings are held, we can all get the proceedings in printed form, and I value these very highly. Unless we attend, however, we miss the social part of the meeting, and the social part would be a big treat to me.

I do not see how we can mix these two institutions together. They are very different. The Bee-Keepers' Union does not have to meet anywhere to carry on its business. We pay our dues, and elect officers by ballot. All is done through the mail. I do not see how the Union could be benefited by consolidating with the North American Bee-Keepers' Association.—*Gleanings.*

Platteville, Wis.

Taxation of Bees in Iowa.

WM. PEARSON.

Bees are taxed in this (Jasper) county, this Spring, from \$1 to \$1.50 per colony, which seems contrary to law, as quoted by Eugene Secor, in AMERICAN BEE JOURNAL for October 19, 1889. He says:

The question, "Are bees taxable?" must be decided by the laws of the State where they are kept. They may be taxable in one State, and exempt in another; therefore, what I shall have to say on the subject relates only to Iowa.

If I remember rightly, this question was ably answered in these columns several years ago, by Dr. Oren, but as there are undoubtedly many new sub-

scribers, I will give my interpretation of the Iowa law. Indeed, it needs no interpretation, the statute being so plain that any one, it seems to me, ought to be able to understand it. I will quote from the Revenue Laws, and from Section 797, which is the section specifying the exemptions: "The following classes of property *are not to be taxed*, and they may be omitted from the assessments herein required." Paragraph 4 of that section reads, "Animals not hereafter specified."

Taxable property is "specified" under Section 801, and the "Animals" therein named are "horses, cattle, mules, asses, sheep and swine." That is all the law there is treating directly or indirectly on this subject, except the quotation below.

Now, one question that is likely to arise is, "Is a bee an animal?" If not, they may be classed in the "All other property, real and personal," which "is subject to taxation in the manner directed." But if bees are not animals, what are they? Webster defines the word animal thus: "An organized living being, endowed with sensation and the power of voluntary motion; and also characterized by taking its food into an internal cavity or stomaeh for digestion; by giving carbonic acid to the air, and taking oxygen in the process of respiration; by increasing in motive power or active, aggressive force with the progress to maturity."

Bees are animals. Some try to excuse their consciences for wanting to tax bees on the ground that they are property, and ought to share their just burden of taxation. But bees are not the only animals exempt, yet we seldom hear of a word of complaint regarding the others. Geese, turkeys, hens, pigeons, guineas, peacocks, *dogs, cats, tame rabbits and fish are all animals, yet the assessor never inquires after the amount of capital that we have invested in them. They are exempt under the section above quoted.

I may open a poultry farm and invest \$5,000 in fine birds, yet the stock would be exempt under the law. I may construct a carp pond, and raise fish enough to supply my family, but the carp are exempt. I might start an ostrich farm, and the birds would be exempt from taxation under the present law, even though they cost \$1,000 apiece. The proper tools of every farmer and mechanic to the amount of \$300 are exempt from taxation.

If the Legislature had intended that all the above-mentioned animals should

be taxed, they would not have exempted them.

As an instance where visible property wholly escapes taxation with the sanction of law, take poultry. The census report for 1880, shows the number of all kinds in the State on June 1 of that year, to have been 8,539,714. At 20 cents each (not an extravagant estimate), the value was more than a million and a half dollars (\$1,707,942). The value of the eggs produced in 1879, at 12 cents per dozen, was \$3,870,471.

The number of colonies of bees in the State is not given in the census report for 1880, but the honey produced in 1879 was 1,310,138 pounds. At 12½ cents per pound, the value was \$163,767, about one twenty-third part of the value of the product from poultry. We do not hear anything about taxing poultry, and I think that it is about time that they give the bee-keepers a rest.

*Under a recent law, dogs are taxed, but it is a sort of a *per capita* tax, and not according to the value of the animal. Its object is to raise a fund with which to pay losses to the owners of sheep or other domestic animals, caused by dogs.

Protection of Single-Walled Hives.

GEO. R. WELLER.

In building a house, the most important consideration is the foundation. If that is as it should be, any kind of house can be put upon it—brick, stone or wood, high or low, wide or narrow, and it will stay there, and give satisfaction.

As with a house, so in the bee-business; the foundation being right, we can winter in the cellar or outside, can work for extracted or comb-honey, can contract or expand, tier up, etc., as circumstances or individual whims may dictate.

Such a foundation, or bottom-board, is made of two pieces of $\frac{3}{4}$ -inch lumber, 4 inches wide, and 8 inches longer than the hive to be used. For the back end, nail these pieces to the ends of a piece 4 inches wide, and long enough to make the frame 8 inches wider than the hive. Nail the front ends to a piece as long as the back one, but wider. This board is nailed in slanting, its lower edge even with the lower edge of the side pieces at their front ends, the top edge even with their top edges, 5 inches back of their front ends. This slanting end is the alighting-board.

On this frame nail a top of good, matched lumber—the thinner the lumber the lighter the hive will be when complete. Let the front edges of the top be even with the front ends of the side pieces, and cut an entrance in this top, $\frac{3}{8} \times 10$ inches, equidistant from the sides, and 5 inches back from the front edge, giving it about the same slant as the alighting-board, nail a bottom to the frame (the tighter and lighter the better), and paint the sides and ends. On this foundation build the hive, and neither heat, cold, snow, rain nor ice shall prevail against it.

SOME OF ITS ADVANTAGES.

Standing or hanging frames stand squarely on this bottom, their front ends in front of the entrance. No extra time or strength is required for the bees to clean their hive, as the dead bees, etc., roll down and out from the inside of the bottom of the hive.

The upper part of the alighting-board is cool on the hottest days, being in the shade, so the guards are always outside the entrance, ready for robbers as they alight. These same guards are out of sight, and do not bother so much when manipulating the hive, or passing back of or by its sides.

The alighting-board being protected from the wind, the loaded bees, when tired, get in quicker. The entrance being in the bottom of the hive, they have a shorter distance to crawl with their loads.

Robbers are driven away easier and quicker down hill than on a level.

No rain or snow will be driven into the hive, and ice cannot form in the entrance.

In packing or unpacking the entrance is no bother.

The sun does not shine on the entrance in Winter, causing the bees to come out and perish on the ice or snow.

The bottom of the hive, protected by its 4 inches of dead air, will be free from moisture. The list could be extended, but this will answer.

A box the size of the bottom, and 6 inches higher than the hive to be used, is made, as light as possible, well painted, and water-tight. A couple of headless wire nails driven part way into the bottom, fitting into corresponding small holes in the lower edges of the box, holds it securely against all comers. A well-painted, water-tight top, very light, of the gable pattern, is used. The eaves project, and the ends telescope down over the box enough to make it rest solid. In each gable end a large

auger hole is made, into which is fitted a wire bee-escape, which any one can make for less than 5 cents per dozen.

The best paint is "Prince's Metallic;" it costs, dry, from $1\frac{1}{2}$ to 3 cents per pound, and is dark brown. One pound will cover as much surface as 2 pounds of common paint, and will last three times as long. It is 79 per cent. pure iron. Do not confound it with the other brown paints made of burnt earth, commonly sold as "railroad" or "barn" paints. The genuine will turn very much darker after being used, owing to the action of the air on the iron.

PROTECTION OF SINGLE-WALLED HIVES.

In the Fall, as soon as there is danger of frost, I see that each hive has enough stores for Winter, and enough sawdust is dumped in with a scoop shovel to fill each outside box to the top, care being taken that it packs down even, but not too tight, the top is put on, and—there you are!

Mr. Heddon wants the top down tight on the sawdust, but I do not. If the roof is as tight as it should be, some moisture will accumulate in the sawdust underneath. The sawdust must be dry to keep in the heat and absorb the moisture from the bees, for on this their health depends, therefore, the pitch of the roof is full of air, which circulates freely through the large auger holes in the gables, the brown paint absorbs all the heat available, the heat and free circulating air keeps the sawdust dry, the dry sawdust keeps the bees warm and dry—the two requisites for their safe wintering on a minimum of stores. Some moisture comes in under the lower edge of the outside box, but rapidly dries out, because of the construction of the bottom-board.

The climate here is dry, but where it is not dry, the outside box should be large enough to slip down over the bottom-board a half inch, and rest on cleats. When the indications are for zero weather, I cork up all but a half inch of the entrance with paper—a little of such air goes a long ways—and leave it until Spring, as it keeps out robbers, and economizes heat. If the bees need more passageway, they will eat it out. As the sun never shines on hive or entrance, they do not come out when they would be lost by the cold. They come out whenever the air is warm enough, as it penetrates the hives. A flight or two during the Winter, often means life or death to them. During the mild days of Spring, their house holds heat well, and

as but few have to stay at home to keep it up, most of them get out and rustle.

Their bowels have been emptied as often as practical during the Winter, they have been dry and warm, they feel good, and if there is anything to be had in their line they get it. Result: Brood-rearing commences and goes on apace. I can hear the peculiar hum that indicates that they are all right.

When the honey harvest begins in earnest, they are ready—the hives are full of brood and bees. Then I raise the outside boxes, sweep the sawdust over the sides of the bottom, and leave it there, as it prevents weeds and mud about the hives, any surplus being scattered by the wind, and where sawdust can be had conveniently, for the hauling, it is cheaper to get a fresh supply in the Fall than to gather this up and save it.

I now tier up, expand, etc., as necessary. Those who wish to, can leave the outside boxes off; I do not. I put them back, and as I tier up the hive, I tier up the outside box correspondingly, so that my hive is enveloped in a pretty good dead-air space, and has ventilation through the holes in the gables. In handling the frames, the outside box is frequently not disturbed, and if the bees get out of the hive into it, I do not mind it, as they soon get out through the bee-escapes in the gables.

Mr. Heddon wants light-colored hives in the Summer to throw off the heat. I do not; I can use all the heat available, as all the nectar brought in must be evaporated, more or less, according to circumstances, to make it into good honey, and the quicker this is done the better the product. The warmer the hive will average, the quicker this will be accomplished. During the greater part of the twenty-four hours, the average temperature is lower outside the hive than inside, and the few hours during which the direct rays of the sun would warm it above the normal, are more than offset by the many hours in which the cooler outside air would bring it below their normal temperature, every degree of which must be made up by more bees remaining in the hive and consuming honey to generate the heat needed, thus entailing a double loss.

Bees consume less honey during the Winter, when in the cellar or in packed hives, because they have to generate less heat than when more exposed, so in the Summer, they use less honey for the same reason, consequently have more for surplus.

The dark-brown outside box, double bottom, and roof, absorbs the heat—get

hot clean through—the dead air inside, and the inner, or hive case, acts as a cushion to keep it from the bees, and my bees never get too hot to work. As the heat of the day declines, the heat absorbed is slowly given off, but protected by the double walls and dead air, it goes slowly, while the bees in single-walled, unprotected hives will have begun generating heat, and consuming honey therefor which otherwise would be surplus, many hours before mine will; or, if they do not use honey to keep up the heat, they cluster to economize it, and the part of the business most interesting to me stops for the time. Evaporation is facilitated in proportion to the extra number of hours the temperature is kept up. If wax is to be made, less artificial heat is needed, less honey is used, and more bees go to the fields.

Such a hive costs more than the dovetailed, for instance! Yes, it does. However, the inside parts I use correspond to the outside, and lessen the cost, and if made in large quantities, with improved machinery, the hive complete, would cost but little more than the dovetailed, and much less than the chaff, but I have no hives to sell, neither have my friends.

This "protection for single-walled hives" pays in proportion to the skill with which the bees are handled; and skill does not mean everlasting fussing; neither does it mean always the most hard work. The average surplus, per hive, is often increased by the work, sometimes by the fussing, but in either case the extra pounds cost more than they will bring in market. Skill with any hive will beat the best protection without it, but the best skill with it, will beat the same skill without it 20 per cent., one year with another. The best tools skillfully used will pay when inferior tools in the same hands fail, in any of the trades, in the professions, on the farm, and in the apiary.

This question of cost is dwelt on more in bee-literature than in that devoted to any other pursuit, for in other industries the fact is generally recognized that the best tools and process will win in the long run, and the poor men are not all in the bee-business.

Let it be thoroughly understood that none but the rich can afford to buy poor goods; it is wrong to teach anything else, as it causes want, and consequent suffering. If I cannot get 10 good hives, I will get 5; if I cannot get 5, I will take 1; if I cannot afford the one, I will do the best possible for the time, and get the best as soon as I can.

This subject of the protection of single-walled hives is important, and every suggestion for its improvement counts in the struggle for the survival of the fittest.

In the contest of Cellar vs. Out-door wintering, bee-periodicals during the last few years, indicate that the latter is slowly gaining. The failure of the honey supply incident to cultivation, is gradually destroying the large bee-ranches. I believe that apiaries of 50 colonies and under now furnish more than half the honey, and that they are on the increase. Their business will not justify an extensive outlay for plant and fixtures, neither is it necessary, for by the proper protection of single-walled hives, using the best fixtures and the best methods will result in the most surplus of the best quality, and at the least cost.

Berlin, Mo.

When and How to Use Separators.

R. C. AIKIN.

The beginner seems almost confounded at the diversity of opinion, and there is some excuse for him, too.

One says we must use separators, and another says they are useless; no need of them at all. Suppose A has 100 colonies, and does not want any increase. He uses all means to prevent swarming, and when the honey-flow comes on he has big colonies, and keeps them so. He uses full sheets of foundation in sections, and has an immense lot of bees in each hive, so that they occupy not less than two supers, and some three and four.

The weather is warm, and the flow may not be extra heavy, but with such a force of bees, even in a light flow, they are bound to bring in lots of honey. The whole super, or supers, are worked at once, and filled, too, and a fine lot of straight combs is the result. Under such conditions, and with a good to extra honey-flow, there will be *very few* combs that cannot be crated; and no separators used, either.

Now comes Mr. B. He lets his bees swarm, or divides them, and the colonies are so weakened that they cannot possibly occupy more than two supers at one time, even with warm weather and a good flow. If they do manage to stretch out that far they cannot send out enough field workers to rapidly fill the sections, so they try to remedy matters by working one side at a time, and so

make a lot of one-sided sections, if separators have not been used.

A very strong colony will, in a light flow, build as straight combs as a light colony will in a good flow.

We have no standard by which we can measure or judge, and say this colony or that one is strong. I mean no general standard, for each man is "a law unto himself," and decides according to his own judgment, and what one man calls a *very strong* colony, another calls, perhaps, fair to average; and so it goes. Each one writes his views, and they differ. Why? Because the circumstances are different. Now, I will give you a plan that I think will work in most cases. There will be some exceptions; but only a few:

If you will so manage your bees that when the flow comes on you will have so many bees in each hive that a 10-frame Simplicity hive will not begin to hold them, and so that you have to add another story to give them room to cluster, or, perhaps, put on supers for the same purpose; then you can get reasonably straight honey without separators, if not over $1\frac{1}{2}$ sections and full sheets are used.

If you have no home market to take the few bulged sections, you may have to use about two separators to each super, and then you can crate it all nicely. But if you allow swarming, or divide so that colonies can work but one super at a time, it will not be safe to leave out the separators.

Have every colony so strong that when the honey-flow comes on they can send as many bees to the supers as are needed in the brood-chamber, and as many to the fields as are found at work in the whole hive; or, what is better, have bees enough to occupy and work three or four supers at one time. A colony cannot do good work if given too much room. Let each colony be kept on just what combs and sections they can work and keep warm when at least one-half the bees are in the fields.

The past season I had the care of over 125 colonies that were not allowed to swarm, and all were bred up just as full as possible. The more prolific colonies were made to help the weaker ones, until each colony was so full of bees that we gave them from two to three brood-chambers (10-frame), room to cluster and keep themselves cool. This great strength was, of course, not attained until the flow was just about to commence.

When the flow began, those colonies would occupy, on an average, about

three supers; a few having only two, a large majority three, some four, and a very few having even five supers. Now, with all this room, at night, when all the bees were at home, they would lie out, with an opening all the way around the hive, except at the back, the front being raised from the bottom-board and blocked up at the front corners $\frac{1}{2}$ to $\frac{3}{4}$ of an inch.

We used separators, but only put two in each super, so that there were two rows of sections, a separator, three rows, another separator, then two rows. So there was only one row of sections—4 out of 28—that did not have a separator on one side; and not one out of 1,000 but could be crated almost as fast as they could be handled, except once in awhile where a foundation had fallen down.

Let it be remembered, that this is not so hot a climate as it is further from the mountains, and almost any night we can sleep under one or two covers.

Writers should tell us more about the system they use. There are many roads by which we may travel, and all will take us to the same place. But one goes by Doolittle's, another by Dadant's, a third by Heddon's. Then there is the Elwood-France route, and a good one it is, too. Now, when we go by these routes we must remember that they are not alike, and it will not do to put on the brake just at the same time and distance on each, but keep your eyes open, and put on brakes, or use the whip, when needed.

Ft. Collins, Colo.

What Causes Foul-Brood, but Contagion?

C. J. ROBINSON.

Some time ago a correspondent of a bee-periodical propounded a problem of great importance to bee-keepers. The question reads: "What causes foul-brood to start in an apiary, when not introduced from another that has it?" Mark you, that the question recognizes, as a fact, that foul-brood does occur when *not* introduced by contagion. The problem does not involve any question as to whether or not foul-brood ever originates in a colony spontaneously, but only asks what causes it to start independent of contagion.

The editor, in attempting to answer, totally ignores the plain import of the question, and rules out the only point submitted, to-wit: What starts foul-

brood when not started by contagion? He says:

I am sure I am right when I tell you that foul-brood never starts in an apiary unless there has already been some of it in the vicinity, or some honey, in some shape or other, has, by some means, brought it into the locality, and the bees have been permitted to get taste of it. Foul-brood can no more originate itself than can a hill of corn originate itself. Chilled brood, suffocated brood, or dead brood, can in nowise or manner originate foul-brood. I have conversed, in regard to the matter, with our best professors of entomology, and with scientific men familiar with all the problems of spontaneous generation and vegetable life. There is no such thing as any plant or animal starting up without a seed or germ.

Varieties may grow and develop, and new species may be originated by natural or artificial selection, but no plant starts up unless the seed was planted by nature or by man. Sometimes it is a little difficult to tell just where the disease did come from, but let an expert look the matter over, and I think he will tell you, generally, where it was contracted.

If the doctrine advanced by our good friend could do no serious injury, I would not interpose a criticism, and I am only prompted by a desire that bee-keepers have knowledge of facts that are susceptible of being, and have been, proved, instead of grave error. It is because bee-keepers have been uninformed as to "what causes foul-brood to start," that so much injury has been done by it. There can be no need of treatment to cure, in but few cases, when the cause is generally known.

It appears that the editor has not investigated the cause of foul-brood, yet he teaches everybody who is equally as competent as himself to deal with the problem, that his guess is "right." His illogical view of the case in question, his belief or disbelief counts no more than did the views of the self-inspired "scientists" who disbelieved Newton's theory that the earth "do move."

The editor says: "Let an expert look the matter over." I agree with him, that experts are competent to teach matters in which they are skilled.

Kindly, I ask correspondents, whether or not it is always proper to bear in mind, when we write for publication, that it is not justifiable to record our individual belief—"I believe" so and so—but mention no special reasons for such belief? We ought to be mindful of the fact that mere belief goes for naught. If I cannot believe the account of Jonah remaining three days of his life in a great fish, and believe that foul-brood

originates from fermenting dead brood, that it never originated otherwise, quite probably my intimate and most highly esteemed friends are sanguine in the belief just the reverse of mine.

Certainly, editors ought to be guided by acknowledged rules recognized by courts the world over, in searching for truth and facts in cases in dispute. Witnesses are not allowed to speak of their belief. Expert testimony is admissible under rules, but it seldom counts. Writers are regarded in the light of witnesses, and they should (and many do) regard their writings as testimony given on the witness stand. Of course, logical theorizing is all right.

The teaching that "foul-brood can no more originate itself than can a hill of corn," sounds very illogical, for the comparison is not well taken, there being no similitude—in nowise analogous. Corn had an origin, and hills of corn is a reproduction of itself. Foul-brood never came into existence in the organic nature of "itself," nor is any putrified substance a created organism, but all putrid matter is disorganized bodies, whose elements have been newly arranged, forming new compounds, such as foul-brood and other decomposed bodies. Foul-brood is neither plant nor animal, and it has no semblance in nature with corn.

There are several close-observing beekeepers, equally as competent as the editor, and who record substantially the allegation that foul-brood originated in one or more of their colonies. The allegation can be read in bee-periodicals, and it has been discussed in conventions. The expert bee-keeper, Wm. McEvoy, who is the competent official foul-brood inspector for the Province of Ontario, Canada, declares that he discovered that foul-brood originated in his apiary. This positive testimony does impeach all recorded opinions offered, holding that foul-brood "never starts in an apiary unless there has already been some of it in the vicinity."

The editor states that he has "conversed, in regard to the matter, with our best professors of entomology, and with scientific men familiar with the problems of spontaneous generation and vegetable life."

Well, how can this be properly offered as argument pertaining to the problem? Really, what has professors of entomology—as such professors—to do with the case? The issue made by the editor in nowise pertains to entomology, nor to raising corn. It is a noticeable circumstance that none of the "professors and

scientific men" have uttered one word that prompts readers to believe that they corroborate the editor's doctrine as he recorded it. Prof. Cook, the scientific entomologist, who is a hundred times more competent to deal with the problem, and who wrote much concerning foul-brood, has not broached the subject of the origin of the disease.* He is learned and sound, so he does not "rush in where angels fear to tread."

The importance of the truth concerning the origin of foul-brood, being laid before readers of bee-periodicals is evident when it appears very probable, or possible, that it is liable to originate from neglected dead brood in colonies.

If discussing the subject prompts investigation, and thus light creep in and dispel the dark parts of the problem, the result must prove of untold benefit to the whole world.

Richford, N. Y.

*See editorial note on page 566.

Perforated Zinc Queen-Excluders.

DR. G. L. TINKER.

Now that queen-excluders are coming into use so extensively, both in this and other countries where bees are skillfully managed, bee-keepers are naturally desirous of knowing what material makes the best queen-excluder, and how they are constructed.

I have found every kind of queen-excluder made of wood alone impracticable, on account of propolis, and in this my experience is corroborated by that of all others who have fully tested it.

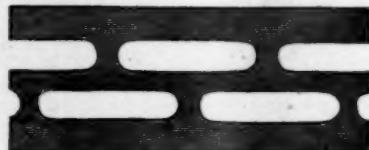
As perforated sheet zinc is without objection in this respect, is cheap, durable and easily manufactured, it is preferred to any other metal. It has been extensively used in whole sheets, and in the one and two-rowed wood-zinc combination.

The whole sheets make the cheapest queen-excluders, but are not without several objections. They easily sag down in the center, and must be supported by a strip of wood underneath and crosswise of the brood-frame, or in some other way. They are also a slight obstruction to the passage of the worker-bees. Their practical advantages, however, are so great in other respects that their use is universally conceded to more than off-set any objection that may be urged against them.

The one-rowed wood-zinc combination was that first invented and used by the writer. In strips $\frac{1}{2}$ -inch wide the wood

came so near the perforations that the workers could pass without hindrance, but if strips $\frac{1}{4}$ of an inch wide were used, unless let into the wood very deeply, they proved a hindrance to the free passage of the workers, the same as the perforations in whole sheets of zinc. The great objection to one-rowed zinc however, was the fact that there were not enough perforations in the queen-excluder, when the zinc was spaced with the wood the same as the brood-frames, to enable a proper ventilation of the supers.

The result was slow ripening of the stores, that did not so much matter when the flow of nectar was moderate; but in a great honey-flow, with large colonies



TWO-ROWED PERFORATED ZINC.

of bees, the trouble from this cause is so great as to warrant the removal of the excluders altogether. I then made the first two-rowed zinc, and found no further trouble about the ventilation of supers.

The difference in results may be seen when the number of perforations is taken into consideration. The one-rowed wood zinc queen-excluder, as usually made, contains only from 150 to 175 perforations about $9\frac{1}{16}$ of an inch long. The same spacing and construction with the two-rowed zinc gives from 300 to 400 perforations $\frac{1}{4}$ of an inch long, and they give ample ventilation and afford ready passage in the largest colonies.

As the construction brings the wood very near the perforations, the bees are able to pass the zinc as easily and as quickly as over any part of their combs, so that there is not the least obstruction or hindrance to worker-bees in passing the two-rowed wood-zinc combination. It, therefore, constitutes the only altogether perfect and satisfactory queen-excluder.

Another point to be considered is the size of the perforations. To be queen-excluding, and yet allow the free passage of the workers, requires the finest adjustment. A variation of less than $1/64$ of an inch will permit the passage, also, of the queen—or at least, many of them—for there is considerable difference in the

size of queens, or, rather, in the size of the thorax.

The thorax of the drone is so large that a $3/16$ inch perforation excludes him, but the queens will easily pass such a perforation, as a rule.

The worker-bees are able to squeeze through a perforation $5/32$ of an inch, but perforations of that size are impracticable because so difficult of passage, and the perforation will only allow free passage when large enough to admit the bee's head without wedging.

I have a size of perforated zinc made in my earlier experiments, that is considerably larger than $5/32$ of an inch, in which I have often seen the bees fast by the top of the head and the tip of the mandibles, which appears to be a little greater in length than the diameter of the thorax. And, as if by instinct, they know that if their heads can pass an opening their bodies can, also; so they have a habit of bobbing their heads through a suspicious opening. If no obstruction is encountered, they then pass readily.

It will be seen, then, how easy it is, in making the perforations queen-excluding, to make them too small, so as to be more or less obstructive, and how necessary it is that every perforation should be exact. No one who has not had experience knows how difficult it is to make dies out of tempered steel and get them exactly right. I have spent days in tempering, refitting, and tempering again, to get them right. For this reason I will not use a machine that makes more than one perforation at a time, as it is impossible to make perfect and uniform work on a machine that makes many perforations at once; so our machines must run very fast. One machine runs 200 a minute, and great skill is required to operate it.

Now, a word to Dr. Miller, and others inquiring if more than one size of perforations in our queen-excluding zinc is necessary: I will say that they are not, but in making a perforation that is fully practicable for the worker-bees (and none other should be thought of) it will be found that very small queens—little if any larger than the workers—will occasionally pass it. But such queens are rare, even among virgin queens, so that the zinc which I use is fully practicable as a queen-excluder, for either virgin or laying queens. I have had virgin queens above my queen-excluders for days at a time, trying continually to get through, without success, and undoubtedly trying every one of the perforations, so that if there had been one just a little too large,

they would have surely found it, and this shows the necessity of uniformity.

No bee-keeper using perforated zinc for queen-excluding should rear queens from larva, and here I must enter a protest against queen-breeders who offer for sale queens whose places are supplied by queens reared invariably from larva too old to develop perfect, fully-developed and hence prolific queens. Such queens may be known by the smallness of the thorax, and may be expected to pass a reliable, queen-excluding zinc occasionally.

The queen-breeders referred to have a good many colonies, and all they do is to take out queens and let the colonies rear more. No good queens can be reared in this way, and bee-periodicals and apiarists should alike frown down these men.

No queen, virgin or laying, that was properly reared from the egg, can pass my zinc. At least in five years of extensive experience in the use of queen-excluders, queen-traps, etc., I have never known one to get through it, nor have I ever heard that any one else among the hundreds that have used it, have had a fully-developed virgin queen to get through it, which is evidence conclusive that perforated zinc can be made practically queen-excluding, and yet not be obstructive to worker-bees.

A perforated zinc can also be made that will exclude drones and allow the passage of the queens, but I do not know if such zinc can be made use of to any great extent. Time will determine.

New Philadelphia, Ohio.

Advantages of an Outside Case.

E. L. PRATT.

Double-walled hives are often confused with chaff hives. There may be advantages in chaff hives when properly constructed, but the double-walled hives can be worked to such better advantage that they are much more desirable. Chaff hives are generally made of heavy lumber, and, being permanently packed with absorbing material, are very clumsy to manipulated, and awkward things to move about. Then the packing is liable to become damp and sour, which is one of the worst things about a chaff hive. With the outside case very thin material can be used in both walls, which is a great saving in lumber and freight, besides rendering the hives easy of manipulation and safety in Winter.

The secret of successful out-door wintering is to rid the cluster of the mois-

ture as soon as thrown off from the bees. Bees will stand any amount of cold if they can be kept dry and sweet. Diarrhea is largely due to moisture gathering closely about the cluster during long cold spells. When the temperature moderates, or the bees move to take food, this water is licked up by the bees, and by over-loading their stomachs with this foul condensed breath the bees contract what is termed bee-diarrhea.

Moisture will always collect on the coldest wall inside. When chaff is used between the two walls it, of course, becomes damp on the outside by absorption, and the dampness will gradually work its way through until the packing is thoroughly saturated, when it will become very cold and frosty. With thin hives and thin outside cases, the moisture is at once taken away from the bees and condensed on the inside walls of the outside case. When the sun strikes the hives it will warm up the outside cases, and the frost collected in the cases will melt, run down the sides and out of the hive.

By using cushions stuffed with chopped hay or straw over the frames, a double hive can be kept as dry and clean as they are at any time during the Summer. This condition is very necessary to winter bees successfully.

Another valuable feature about an outside case, is the ease with which colonies can be built up in Spring, especially when closed-end frames are used inside the winter case.

The cases work in well when feeding in early Spring or during the Summer and Fall, and there is no need of shade-boards when the outside cases are used.

In the production of comb-honey, the cases are a great aid, and the supers are always comfortable for the bees to work in, and if cold nights come on during gathering time the bees are not driven from the supers.

There are many other minor points of advantage about the outside cases, and Southern as well as Northern bee-keepers can use them to good profit. The time is close at hand when $\frac{1}{2}$ -inch stock will be superseded by $\frac{5}{8}$ stock in the manufacture of bee-hives.

A perfect bee-hive should be cheap, light in weight, and durable, easy of manipulation, and should hold movable frames of standard Langstroth size. It should not be too large nor too small, but of a size best adapted for securing all of the honey in neat, salable shape.

For either comb or extracted-honey, the 8-frame size is about right, though we have been very successful with seven

Langstroth frames to the hive. It is natural for bees to store honey over the brood, therefore all honey receptacles should be adjustable to the top, and directly over the frames, so arranged that two or more can be tiered up, according to the amount of honey being gathered.

The standard section is of one piece, and $4\frac{1}{4}$ inches square. Any other size is a drug on the market in the majority of cases. The sections should be so arranged as to be interchangeable, either singly or in rows, as many times bees are loath to work in the outside sections, or those coming close to the ends. By jumping the unfilled sections to the center all are worked out at once, allowing us to remove the honey in cases rather than by the single section.

If the hive sets perfectly level from side to side, and wide sections are used, separators are not really necessary. But hives are apt to settle, or we may wish to use narrow sections. Separators afford the safest method of securing perfectly flat combs inside each section so necessary in shipment to distant markets, or the carting about in a retail trade. Tin, glass, wire and such materials are nuisances about any hive.

There should be some simple means of clamping the sections tightly together to avoid the deposit of large quantities of glue. By compressing the sections there are no cracks for the bees to stop, and we do not need to spend valuable time in scraping off an unnecessary deposit of useless matter. The cover should be a simple, flat, well cleated board of light weight, and should be kept well painted. All the joints should be square.

By using top-bars of good width and thickness, there is no need of honey-boards, unless they are queen-excluding, and for a queen-excluder there is nothing so good as a solid sheet of metal, well bound.

Here in New England a hive is not fit to winter out-of-doors unless it has an outside or winter case, to admit of packing with some absorbent material, such as cut hay, straw or chaff. A good sized cushion should be made of this material, to spread over the frames and entirely cover the top of the hive. There should be no packing at the sides until breeding commences in the Spring, as the heat is not sufficient to throw off the moisture until then.

Ventilating holes should be provided at the ends of the winter case, near the top, to carry off all the moisture as fast as taken from the cluster. In this lies the secret of successful out-door win-

tering of bees. Over all comes a tight, well-painted winter roof, which can be screwed down and left until the flowers bloom in the Spring. There should be but one entrance, and that low down, so that the bees enter under the combs. Three-cornered blocks for contracting the entrance, have never been improved upon.

There are several minor points that are necessary to a perfect bee-hive. The space under the frames should be one-half of an inch, and those at the ends of the hanging frames are three-sixteenths—not over one-quarter. One-fourth inch scant is considered to be the correct space between the top-bars and the sections, to avoid the deposit of burr combs. Brood-combs spaced $1\frac{1}{8}$ inches from center to center, will do away with all brace combs. If closed-end frames are used, they should be compressed the same as the sections, to avoid glueing.

If you decide to change from hanging-frame to closed-end, a new set of brood-frames is all that is necessary. If you think you will have better success in wintering in a double hive, an outside case can be added for a small amount.

Beverly, Mass.

Convention Notices.

E The eighth semi-annual meeting and basket picnic of the Progressive Bee-Keepers' Association, will be held on Thursday, May 7, 1891, at A. H. Williams' Hall, Chagrin Falls, Ohio. Those interested in bees and honey are cordially invited.

MISS ANN DUTTON, Sec., So. Newbury, Ohio.

E The bee-keepers of Western Connecticut who are interested in forming a Bee-Keepers' Association, are requested to meet at Mr. Edwin E. Smith's, in Watertown, Conn., May 13, as early in the day as possible. A good time is expected.

EDWIN E. SMITH.

EDWARD S. ANDRUS.

E The Ionia Bee-Keepers' Convention, will meet at Ionia (Mich.) May 6, 1891. It is intended by the management to have a "Fair in connection with it. W. Z. Hutchinson, of Flint, Mich., editor of the "Bee-Keepers' Review," will deliver an address. He is one of the leading bee-masters of the United States. You cannot afford to miss his address. Come, and bring your wife with you. Get your neighbors to come. Will you please bring with you samples of hive and frame, super and sections, and samples of honey and mode of putting up, etc., and let us have an exhibition of our own.

HARVEY SMITH, Sec., Ionia, Mich.

E The 8th semi-annual meeting of the Susquehanna County Bee-Keepers' Association will be held at Montrose, Pa., on Thursday, May 7, 1891.

H. M. SEELEY, Sec., Harford, Pa.

E The Central Michigan Bee-Keepers' Convention will be held at Pioneer Room, at the Capitol, Lansing, Mich., on Wednesday, May 6. A cordial invitation is extended to all.

W. A. BARNES, Sec., Lansing, Mich.

E The Des Moines County (Iowa) Bee-Keepers' Association, will meet at the Court House in Burlington, Iowa, on Tuesday, June 2, 1891, at 10 a.m. It is intended to organize a Southeastern Iowa Association. All interested in bees and honey are cordially invited to attend.

JOHN NAU, Sec., Middletown, Iowa.

GEO. BISCHOFF, Pres., Burlington, Iowa.

CONVENTION DIRECTORY.*Time and place of meeting.*

1891.
May 6.—Ionia, at Ionia, Mich.
 Harmon Smith, Sec., Ionia, Mich.
May 6.—Central Michigan, at Lansing, Mich.
 W. A. Barnes, Sec., Lansing, Mich.
May 6.—Bee-Keepers' Ass'n and Fair, at Ionia, Mich.
 Open to all. Harmon Smith, Sec., Ionia, Mich.
May 7.—Progressive, at Chagrin Falls, Ohio.
 Miss Ann Dutton, Sec., So. Newbury, Ohio.
May 7.—Susquehanna County, at Montrose, Pa.
 H. M. Seeley, Sec., Harford, Pa.
May 13.—Western Connecticut, at Watertown, Conn.
 Edward S. Andrus, Torrington, Conn.
June 2.—Des Moines County, at Burlington, Iowa.
 John Nau, Sec., Middletown, Iowa.

[3] In order to have this table complete, Secretaries are requested to forward full particulars of the time and the place of each future meeting.—THE EDITOR.

North American Bee-Keepers' Association

PRESIDENT—P. H. Elwood.... Starkville, N. Y.
 SECRETARY—C. P. Dadant..... Hamilton, Ills.

National Bee-Keepers' Union.

PRESIDENT—James Heddon .. Dowagiac, Mich.
 SEC'Y AND MANAGER—T. G. Newman, Chicago.

Bee and Honey Gossip.**Bright Prospects.**

I have never seen a better prospect for a good honey crop than at present. White clover is looking fine, and is more abundant than ever before. The Winter has not been severe enough to injure the basswood, or white or sweet clover. These give us our principal crop of honey. Bees have wintered well in this part of the State. I put 53 colonies, packed in chaff hives, into winter quarters, and have not lost a single colony or queen.

MILO GEORGE.
 Bowling Green, O., April 21, 1891.

Lost all Their Bees.

Last Summer was the poorest season that I ever saw for honey, the bees barely gathering enough to live on, and mine would have starved had I not sown buckwheat for them, but from the buckwheat they secured considerable honey, and out of the 45 colonies which I put into winter quarters on Nov. 1, I now

have 22 good colonies, and the bees were never in better condition at this time of year—they are just booming. In this locality many lost all their bees, some lost half of their colonies, and a few suffered no loss at all. Last year the County Board ordered all bees assessed. Some assessors listed them, and some did not, and as the bee-keepers protested against the assessment, the board concluded not to assess the bees this year. If the weather continues favorable, I think bees will begin to swarm about the middle of May.

O. P. MILLER.

Glendon, Iowa, April 24, 1891.

Prospects Were Never Better.

Bees in this section of the State that went into winter quarters with plenty of stores, are in excellent condition, and the prospects for a good honey crop the coming season were never better at this time of year in Kansas. With a good season and strong colonies, bee-keepers must surely secure a fine harvest.

O. A. GESEKA.

Wellsville, Kans., April 23, 1891.

Heavy Loss of Bees.

Last Fall I prepared 22 colonies of bees for wintering on the summer stands, by packing them in winter cases, using shavings for packing. I fed them with sugar syrup, as the Fall was a very poor one, and they were all short of stores. All but one colony came through the Winter in good condition, but that colony was so weak that I united it with another colony, and now have 21 strong colonies of bees. Among my neighbors who keep bees in box-hives, and do not feed them, 90 per cent. have died.

J. P. SMITH.

Sunapee, N. H., April 29, 1891.

Loss by Starvation.

About nine-tenths of the bees in this vicinity have died during the Winter and Spring. Last season was a very poor one for honey, and, the Winter being an open one, most of the bees were left on the summer stands, with no protection. As they were poorly supplied with stores, nearly all of them starved. Being so busy with my farm work, I neglected my bees somewhat, and my own loss was heavy.

C. A. WRIGHT.
 Little Prairie Ronde, Mich.

Wavelets of News.

More Sugar for the Money.

I had occasion to buy a barrel of sugar for feeding bees recently, and intended to buy A sugar. The wholesaler asked for what purpose I wanted it, and, after saying for feeding bees, he said I wanted granulated, as there was more sugar for the money. Their sales of sugar, as he showed me by their books, run five barrels of granulated to one of all other kinds. Granulated is 6 per cent. water, A 19 per cent. I write this as I was intending to try A sugar, as you sometimes use it. It is an easy matter to figure out the cost of sweet by using the percentage given.—F. A. SALISBURY, in *Gleanings*.

Destruction of Clipped Queens.

Some say they lose so many queens if they clip their wings. One reason, I think, is because the scissors were not strictly clean, and had been used for other purposes, and so left a scent on the queen, as bees have a very keen smell; or the fingers were not perfectly clean, or the wing was cut too close, or she was clipped during a honey dearth, when bees are cross. I believe that bees, oftener than we think, kill or ball their queen when handled in a honey dearth (even when the queen is not touched), especially in the Spring.—MRS. L. C. AXTELL, in *Gleanings*.

Proper Time to Spray Trees.

May is the month in which we do the most of our spraying.

The first thing to learn is the habits of the insects we wish to destroy. Apple trees are sprayed to destroy the larva of the coddling moth. The moth deposits her eggs in the calyx of the apple, or blossom, from about the falling of bloom until 10 or 15 days after. The larva hatches in a few days, according to the temperature; and, if not killed, it begins to eat its way into the fruit.

About three or five days after blossoms fall is the best time to spray, and continue so doing for about 20 days, as often as rain washes off the poison. If, after the first spraying, it should not rain for a week or ten days, you will kill 75 per cent. of the larvae.

The curculio does not attack the plum until the fruit is about the size of peas,

which, in ordinary weather, is a week or ten days after the blossoms fall.

Spray plums the same as apples, viz.: with paris green, at the rate of one pound to 200 gallons of water, applied with a good spraying-pump. Some use the same proportion of london purple on apples; but it should be avoided on all stone fruits, as it is liable to injure the foliage.

You will see by the above that it is time and material thrown away to spray trees while in bloom; for, nine times out of ten, the rain will wash away the poison before the larva is on hand to eat it.—G. H. ASHBY, in *Gleanings*.

Forcing Increase.

A simple and safe method for forming new colonies is to go to a strong one and take from it two frames of capped brood and place them, bees and all, in a new hive. From another colony fully as strong, borrow two frames of hatching brood, and place one on each side of those in the new hive. In both cases be careful not to take the old queen.

Move one of the strong colonies to a new stand, and set the new hive in its place.

Should more bees leave the colony that was moved than enough to cover the four combs in the new hive, their positions should be reversed until the desired force is in each hive.

At the end of the third day introduce a young laying queen.

Empty combs or full sheets of foundation should be placed at the side of those occupied as soon as the colonies become strong. The spaces left in the hives from which the brood was taken, can be filled in the same manner.

Never attempt to force increase unless honey is coming in freely. A comb of honey should be given to the forced colony if the flow should happen to shut down.—E. L. PRATT, in the *Apiculturist*.

Excellence is Cheapness.

I have felt, and still feel, that this cheap queen traffic tends to haste, not care, in breeding, and that with "dollar queens" ruling in the market, there is lack of inducement for the careful, painstaking labor that is absolutely requisite to give us the best race of bees.

I have feared that this "cheap queen" traffic would crush the hard effort, requiring study, time, money, and the most cautious experiment and observa-

tion necessary to give us a very superior race of bees. There is reason to hope now that it will, at most, only delay it. Enterprising apiarists see in this the greatest promise for improved apiculture, and are already moving forward. Enterprising bee-keepers will purchase and pay well for the bee of the future that gives such evidence of superior excellence.

One thing is certain: "dollar queens" are in the market, and are in demand; so whether the business tends to our good or evil, as rational men we must accept the situation, and make the most of things as they exist.

Let me urge, however, upon the progressive apiarist that there is no possible doubt but that the bees of the future will be immensely superior to those of to-day.

Man can and will advance here, as he has in breeding all other stock. If the obstacles in the way are greater, because of the peculiar natural history of the bee, then the triumph, when it comes, will be greater, and the success more praiseworthy.—PROF. A. J. COOK, in the *Apiculturist*.

New Variety of Bees.

In the *Canadian Bee Journal*, "A Hallamshire Bee-Keeper" describes a new variety of bees—the Punic—*Apis Niger*. This variety is from Africa, is very difficult to obtain, but, according to this "Hallamshire Bee-Keeper," who has tried it, no other bee is its equal. He is going into the business of importing them, but the price will be high at first—\$40 for an imported queen.—Review.

Neatness in the Apiary.

Cheapness in hives is desirable, so it would be in building a house; but cheapness is not the only feature to be taken into consideration. Convenience, durability and beauty must be combined with cheapness. Hives made of poor lumber, poorly put together, and unpainted, will never be satisfactory to the enterprising apiarist. Old hives should be repaired and painted, and new ones procured if necessary before the active work of the season begins. You can identify a successful bee-keeper by looking at his apiary, just the same as you can tell a good house-keeper by looking through her house.

Show me an apiary that has neat, well-painted hives and clean grounds, and I will show you an apiarist who is

successful; but let me see broken, unrepainted, unpainted hives, and a trashy ground, and I will show a bee-keeper who says "there is nothing in bees." The bee-keeper can find no better example than by looking inside his beehives. Try to keep the outside of your hive as neat in appearance as the inside. —WALTER S. PODER, in the *Indiana Farmer*.

HONEY AND BEESWAX MARKET.

DETROIT, April 25.—Good comb-honey getting scarce, and selling at 14@15c. There is some dark and dirty looking in the commission houses, but it is very slow sale, and at the buyers' own prices. Extracted, 8@9c. Beeswax firm, at 28@30c.

M. H. HUNT, Bell Branch, Mich.

NEW YORK, April 24.—Market is bare of comb-honey. We quote: Extracted, buckwheat, 7@7½c; California, in good demand, at 7@7½c, and market well supplied; Southern, none in market. Beeswax, scarce at 27@29c.

HILDRETH BROS. & SEGELEN, 28-30 West Broadway.

KANSAS CITY, April 25.—Market continues about the same; stocks becoming light. We quote: White 1-lb. comb, at 16@18c; dark, 10@12c; California white, 2-lb., 12@15c; extracted, 6@7c. No Beeswax in the market. CLEMONS, MASON & CO., Cor. 4th and Walnut Sts.

CINCINNATI, April 25.—There is a good demand for both comb and extracted honey, with fair supply. Comb-honey, 14@16c for choice, in a jobbing way; extracted, 6@8c.

Beeswax is in good demand at 25@30c for good to choice yellow.

C. F. MUTH & SON, Corner Freeman & Central Aves.

CHICAGO, April 26.—Demand for both comb and extracted honey increasing, and our stock is light. Can use shipments to advantage. 1-lb. sections, 16@18c; 2-lbs., 14@15c; extracted, 7@8c. Beeswax, 30c.

S. T. FISH & CO., 180 S. Water St.

KANSAS CITY, April 25.—Fancy white 1-lb. comb, 18c; fair to good, 17c; dark 1-lb., 14@15c; 2-lb. white comb, 15@16c; 2-lb. dark, 13@14c; extracted, white, 7c; dark, 5@6c.

HAMBLIN & BEARSS, 514 Walnut St.

CHICAGO, April 26.—There is the usual Spring demand for honey, and best white continues to bring 17@18c; honey that is off in color and condition sells for 2@3c less; very little call for dark comb. Extracted, is selling at 7@8c, in cans or barrels. Beeswax, 27@28c.

R. A. BURNETT, 161 S. Water St.

BOSTON, April 24.—Honey is in fair demand; supply short. White 1-lb. comb is very scarce and wanted, at 18@20c; fair to good, 18@19c; 2-lb. sections, 16@17c. Extracted, 8@9c. Beeswax, 30c.

BLAKE & RIPLEY, 57 Chatham Street.

ALBANY, N. Y., April 24.—Honey market is slow, with small stocks of comb. We quote: clover, 1-lb. comb, at 15@16c; buckwheat, 12@13c. Extracted, light, slow at 7@8c; dark, firm at 6@7c. Beeswax, 25@27c.

H. R. WRIGHT, 326-328 Broadway.

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• • • • •
Calvert's No. 1 Phenol, mentioned in Cheshire's Pamphlet on pages 16 and 17, as a cure for foul-brood, can be procured at this office at 25 cents per ounce, by express.

Jacob T. Timpe, of Grand Ledge, Mich., offers to give away 50 Tested Queens, of his five-banded Italians, to purchasers of his New Potatoes, which have been advertised in the BEE JOURNAL. Do not fail to read his advertisement on page 587. He refers you to his postmaster, as to his responsibility.

Supply Dealers desiring to sell our book, "Bees and Honey," should write for terms.

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Binders made especially for the BEE JOURNAL for 1891 are now ready for delivery, at 50 cents each, including postage. Be sure to use a Binder to keep your numbers of 1890 for reference. Binders for 1890 only cost 60 cents, and it will pay you to use them, if you do not get the volumes otherwise bound.

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